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Telacanthomysis, a new genus, for *Acanthomysis columbiae,* and redescription of *Columbiaemysis ignota* (Crustacea: Mysidacea: Mysidae)

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Abstract.—Two mysids found in the northeastern Pacific are revised. *Acanthomysis columbiae* (Tattersall, 1933) is transferred to the new genus, *Telacanthomysis,* based on the characters of the slender antennal scale, the postorbital spines on the anterior margin of the rostrum, the pleopods with developed pseudobranchial lobe, the endopod of the uropod without spines in the statocyst region, and the armature of the telson. *Columbiaemysis ignota* Holmquist, 1982, is redescribed in detail. *Acanthomysis brunnea* Murano & Chess, 1987, described from Californian waters is judged to be a junior synonym of *C. ignota.*

Holmquist (1979, 1980, 1981a, 1981b) carried out a systematic study on *Acanthomysis* s. l. distributed in the coastal waters of the western North America, and removed nine species to new genera. Holmquist left *Acanthomysis columbiae* (Tattersall, 1933) in *Acanthomysis* s. l., because it did not agree with her diagnosis of *Acanthomysis* s. s. and Holmquist had no adult specimens of the species to study. Kathman et al. (1986) used "*Acanthomysis*" forma *supraoculospinifera columbiae* for this.

Holmquist (1982) established *Columbiaemysis ignota* based on the two female and seven juvenile specimens collected from British Columbia. The male was reported first by Kathman et al. (1986), but the description was brief.

This paper deals with the establishment of the genus *Telacanthomysis* for *Acanthomysis columbiae* and the redescription of *Columbiaemysis ignota.*

The body length was measured along the dorsal median line from the tip of the rostrum to the posterior end of the telson excluding spines. Some of the present specimens examined are deposited in the National Science Museum, Tokyo (NSMT), Japan.

Subfamily Mysinae

Tribe Mysini

Telacanthomysis, new genus

Diagnosis.—Carapace produced into short rostral plate with rounded anterior margin bearing pair of postorbital spines; anterolateral corner of carapace acutely pointed. Eyes large. Antennal scale remarkably narrow with rounded apex, setose on all margins, apical suture present. Antennal sympod with spiniform process at inner and outer distal angles. Labrum with acute, spiniform, anterior process. Endopod of third to eighth thoracic limbs with carpopropodus divided into 6–9 subsegments. Penis armed with many setae on posterior margin and several inwardly curved setae on apical

margin. Marsupium composed of 2 pairs of ordinary oostegites. First to third and fifth pleopods of male and all pleopods of female reduced to unsegmented lobe, gradually increasing in length posteriorly. Fourth pleopod of male biramous; endopod reduced to unsegmented lobe; exopod developed, long, slender, 2-segmented, proximal segment long, distal segment armed with 2 long terminal setae. Pseudobranchial lobes of all pleopods well developed. Endopod of uropod without spines in statocyst region. Telson linguiform, armed with spines throughout margins; distal margin armed densely with many spines slightly shorter than those of lateral margins.

Type species.—Neomysis columbiae Tattersall, 1933.

Etymology.—The generic name is derived from the Greek "*tele*", which refers to "far" and *Acanthomysis.* This species occurs in different habits compares to *Acanthomysis.* The name is feminine in gender.

Remarks.—Telacanthomysis differs not only from *Acanthomysis* s. s. but also from *Acanthomysis* s. l. in the following characters: the anterolateral corner of the carapace is acute, the anterior margin of the carapace bears a pair of the postorbital spines, the antennal scale is long and remarkably narrow, the antennal sympod is armed with a spiniform process at each distal angle, all pleopods have a well developed pseudobranchial lobe, the exopod of the fourth pleopod of male is extremely long (extending posteriorly beyond the apex of the telson) and slender, the endopod of the uropod is not armed with spines, and the telson is linguiform and armed with many short apical spines on the apical margin.

Telacanthomysis is allied to *Xenacanthomysis* Holmquist, 1980, in the acutely pointed anterolateral corner of the carapace, the number of the subsegments of the carpopropodus of the endopod of the third to eighth thoracic limbs, and the shape and armature of the telson. However, *Telacanthomysis* is easily distinguishable from *Xenacanthomysis* as follows: in the former genus the antennular peduncle of male is normal without peculiar process, whereas in the latter genus it is provided with a curious knob-like process on the dorsal surface of the second and third segments; in the former genus the exopod of the fourth pleopod of male is very long, slender and divided into two segments, while in the latter genus it is remarkably robust and clear segmentation does not exist; and in the former genus the pseudobranchial lobes of all pleopods are well developed, while in the latter genus these are less developed.

Telacanthomysis is also similar to *Alienacanthomysis* Holmquist, 1981b, in the character of the rostrum and telson, but it differs from *Alienacanthomysis* with respect to the postorbital spines on the anterior margin of rostrum, the more robust antennular peduncles, the spiniform anterior process on the labrum, and the well-developed pseudobranchial lobe of the pleopods.

Telacanthomysis columbiae (Tattersall, 1933), new combination
Figs. 1, 2

Neomysis columbiae Tattersall, 1933:12–14, figs. 5, 6 (type locality: Port Alexander, western Canada).

Acanthomysis columbiae: Ii, 1936:589 (list).—Banner, 1948:88, 89 (diagnosis).—Tattersall, 1951:204–207, figs. 80–82.—Gordan, 1957:337 (list).—Mauchline & Murano, 1977:44 (list).—Müller, 1993:191 (list).

"*Acanthomysis*" *columbiae:* Holmquist, 1981b:407, fig. 11.—1982:491.—Daly & Holmquist, 1986: 1208 (list).

"*Acanthomysis*" f. *supraoculospinifera columbiae:* Kathman et al., 1986:82, fig. (p. 83).

Material examined.—6 males (16.4–18.8 mm) and 1 female (20.2 mm); California, 20 m, 2 Aug 1991, provided by J. R. Chess (1 male and 1 female: NSMT-Cr 12980). 1 male (16.0 mm) and 1 female (19.6 mm); from stomach of a bird, Cassin's auklet

(*Ptychoramphus* sp.), Stinson Beach, California, 6 Aug 1997, borrowed from M. Galbraith.

Description.—Body robust; integument smooth. Thoracic somites without sternal process.

Carapace produced into short rostral plate extending to base of antennular peduncles; anterior margin rounded, armed with pair of prominent, acutely pointed postorbital spines (Fig. 1A–C); anterolateral corner acutely pointed (Fig. 1C); posterior margin smooth, emarginate, leaving last two thoracic somites exposed dorsally.

Eye well-developed, 1.2–1.4 times as long as broad; cornea large, globular, more than half as wide as carapace, wider than eyestalk, occupying more than half of entire eye in dorsal view; eyestalk armed with setae on basal part, without papilliform process on dorsal surface (Fig. 1A, B).

Antennular peduncle of male more robust than that of female, first segment slightly shorter than distal two segments combined, third segment with appendix masculina, which is almost same in length with segment supporting it (Fig. 1A); in female first segment as long as distal two segments combined (Fig. 1B). Inner antennular flagellum narrower than outer in male, wider in female (Fig. 1A, B).

Antennal scale extremely narrow with rounded apex, almost straight, extending to apex of appendix masculina of antennular peduncle in male (Fig. 1A, D), in female extending beyond distal end of antennular peduncle for $\frac{1}{5}$ of its length (Fig. 1B), 12.8–13.6 times as long as broad, all margins setose, apical suture marked off at distal $\frac{1}{14}$ (Fig. 1D). Antennal peduncle of male more robust than that of female, extending to distal $\frac{2}{5}$ of scale, third segment as long as second (Fig. 1D); in female extending to proximal $\frac{3}{7}$ of scale, third segment $\frac{2}{3}$ length of second. Antennal sympod with spiniform process at inner and outer distal angles (Fig. 1D).

Labrum with short, spiniform process on anterior margin. Mandibular palp with second segment slightly expanded mesially, 3–3.8 times as long as broad, third segment slender, about 6 times as long as broad, about $\frac{2}{3}$ of second in length. Outer lobe of maxillule armed with 12 stout spines on distal margin and 3 setae on surface, hump-like process present in middle of outer margin. Maxilla with exopod extending near anterior margin of first segment of endopod and armed with plumose setae on outer and apical margins; endopod with second segment 1.5 times as long as broad, with setae on distal margin but not with spines.

Endopod of first thoracic limb short and robust, preischium, ischium and merus with inner margin swollen. Endopod of second thoracic limb short, rather slender. Endopod of third to eighth thoracic limbs slender. Endopod of third to eighth thoracic limbs with small triangular process in inner distal part of basis. Ischium with numerous setae on inner margin of endopod of third to sixth thoracic limbs of both sexes (Fig. 1E), with 11–18 short and long setae on distal half in seventh endopod, and with several setae on distalmost part in eighth endopod (Fig. 1F). Carpopropodus of endopod of third to eighth thoracic limbs divided into 6–9 subsegments, setae at outer distal angle of proximal 2–4 subsegments and often, those on distal half of outer margin of first subsegment, provided with serration on distal half of anterior margin (Fig. 1E, F). Dactylus of endopod of third to seventh thoracic limbs with short and stout terminal claw (Fig. 1E), that of eighth thoracic limb with short, inwardly curved claw (Fig. 1F). Exopods of thoracic limbs with flagellum 8-segmented in first and eighth limbs and 9-segmented in second to seventh limbs; outer distal corner of basal plate rounded, smooth (Fig. 1F).

Penis about 3 times as long as broad in lateral view, armed with 17–19 setae on posterior margin and 6 inwardly curved setae on apical margin, anterior margin smooth (Fig. 1F).

Female with rudimentary oostegite on sixth thoracic limb and ordinary oostegites

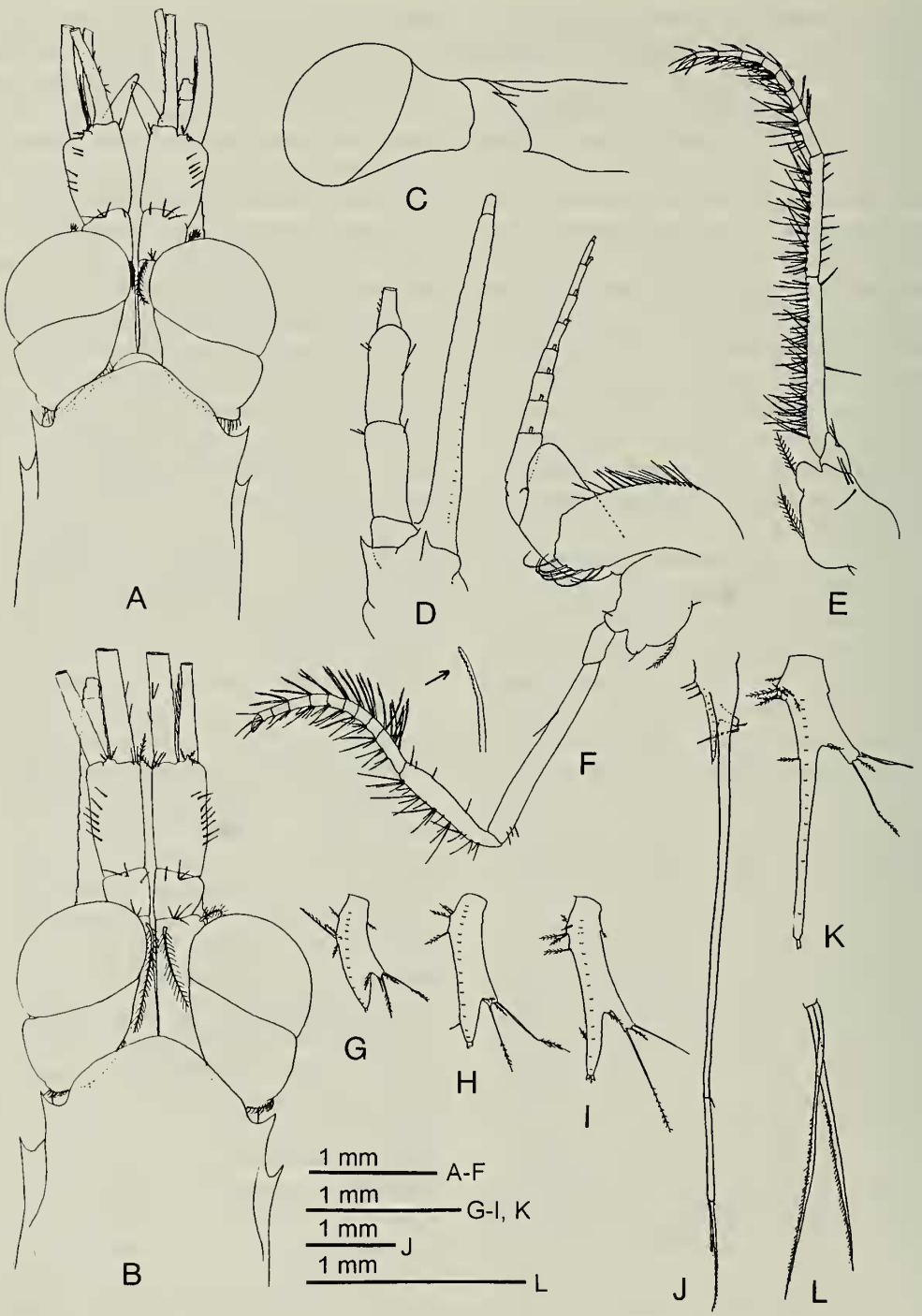

Fig. 1. *Telacanthomysis columbiae* (Tattersall, 1933), new combination. A, C–L: male (17.8 mm, NSMT-Cr 12980); B: female (20.2 mm, NSMT-Cr 12980). A, B, Anterior part of body, dorsal view; C, anterior part of body, lateral view; D, antenna; E, endopod of fourth thoracic limb; F, eighth thoracic limb and penis; G–I, first to third pleopods; J, left fourth pleopod; K, fifth pleopod; L, terminal end of endopod of right fourth pleopod.

on seventh and eighth thoracic limbs; oostegite of seventh limb with bailing lobe.

First to third abdominal somites with 2 or 3 dorsal grooves (Fig. 2A), fourth to sixth somites without grooves, folds or spine rows, sixth somite with posterolateral corners acutely pointed (Fig. 2B); first to fifth somites subequal in length, sixth somite 1.4 times as long as fifth.

All pleopods in both sexes, except fourth of male, reduced to unsegmented lobe, gradually increasing in length posteriorly, fifth pair slender, 1.6 times as long as third; pseudobranchial lobe well developed, situated in distal half of outer margin in first to third pleopods, at middle in fourth female pleopod, and in proximal half in fifth pleopod (Figs. 1G–I, K, 2C–G). Fourth pleopod of male biramous; endopod rudimentary, unsegmented; exopod developed, long, slender, extending posteriorly beyond apex of telson, 2-segmented, proximal segment more than 6 times as long as endopod, armed with 1 tiny seta at outer distal corner, distal segment ¼ length of proximal segment, armed with tiny seta at each distal corner and 2 long, barbed setae on terminal end, latter setae subequal in length, 1.1 times longer than distal segment (Fig. 1J, L).

Endopod of uropod extending slightly beyond apex of telson, without spines on inner margin; exopod slender, about 1.6 times longer than endopod (Fig. 2H).

Telson elongate, linguiform, 1.3 times as long as last abdominal somite, 2.1 times as long as widest part at base, narrowing towards basal ¼ at which slight constriction is present, gradually broadened towards middle, again narrowing gradually towards broadly rounded apex which is ⅓ as broad as at base (Fig. 2H). Lateral margin of telson armed along whole length with about 50 small, variously sized spines which are arranged more densely in distal half, not arranged in groups (Fig. 2H, I). Apical margin armed densely with 25–30 various sized spines slightly shorter than lateral ones (Fig. 2J).

Remarks.—Holmquist (1981b) discussed the morphological differences in the antennal scale and telson among specimens examined by her with differences shown in Tattersall's illustrations (Tattersall 1933: Figs. 5–6, 1951: Figs. 80–81).

The antennal scale was shown by Tattersall (1933) to be unarmed on the basal portion of the inner and outer margins. Holmquist (1981b) also observed the same features in juvenile specimens from British Columbia. In the present specimens, however, the antennal scale is armed with strong plumose setae along whole length of the inner and outer margins such as the specimens examined by Tattersall (1951).

Holmquist (1981b) described the apex of the telson as follows: the apex of the adult specimens from British Columbia was relatively square and armed with a dense row of small, equal-sized spines (Tattersall 1933); in the immature or semi-adult specimens from California, the apex was more rounded and armed with a dense row of unequal spines, which were slightly longer than the closest lateral spines (Tattersall 1951). In the juvenile specimens from British Columbia (Holmquist 1981b), the apex was more narrowly rounded, and armed with some large spines, which were larger than the lateral spines, and a pair of median small spines at the middle. She suggested that the differences above were associated with the stage of growth and/or population. The present adult specimens from California agree well with the original description in the shape and armature of the telson. The differences are judged to be a morphological change with growth.

Columbiaemysis Holmquist, 1982

Columbiaemysis Holmquist, 1982:496.—Kathman et al., 1986:123.

Diagnosis.—Carapace anteriorly produced into triangular rostral plate; anterolateral corner acutely or bluntly pointed. Antennal scale lanceolate with rounded apex, all margins setose, apical suture pre-

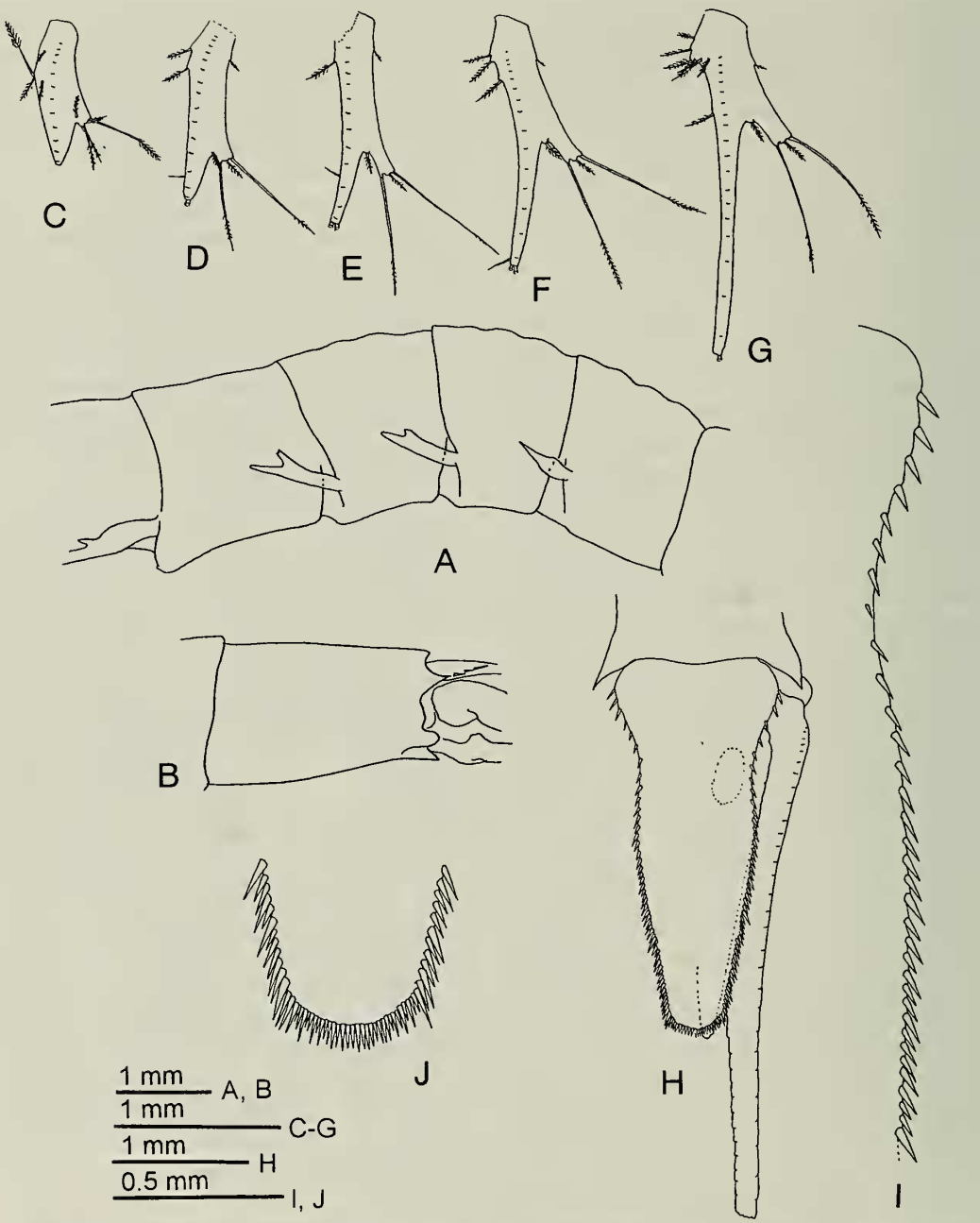

Fig. 2. *Telacanthomysis columbiae* (Tattersall, 1933), new combination. A, B, H, J: male (17.8 mm, NSMT-Cr 12980); C–G, I: female (20.2 mm, NSMT-Cr 12980). A, First to fourth abdominal somites, lateral view; B, sixth abdominal somite, lateral view; C–G, first to fifth pleopods; H, telson and uropod, dorsal view; I, proximal half of lateral margin of telson, dorsal view; J, apical part of telson, dorsal view.

sent. Labrum with acute, spiniform, frontal process. Maxillule with hump-like projection on outer margin of outer lobe. Endopod of third to eighth thoracic limbs with carpopropodus divided into 4–6 subsegments. Penis armed with several short setae on posterior margin, several inwardly curved setae on apical margin, and several plumose setae on distal half of anterior margin. Marsupium composed of 2 pairs of ordinary oostegites. All pleopods of both sexes, except fourth of male, reduced to unsegmented lobe, increasing in length posteriorly; fifth pair long; pseudobranchial lobe poorly developed. Fourth pleopod of male biramous; endopod rudimentary, unsegmented; exopod elongate, 2-segmented, distal segment long, with 2 long spiniform setae on terminal end. Endopod of uropod armed with 4 spines on inner ventral surface of statocyst region. Telson linguiform, armed with spines along entire margins, spines not arranged in groups, apex with two pairs of spines, outer pair longer than inner.

Remarks.—*Columbiaemysis* characterized by the pointed anterolateral corner of the carapace, the four- to six-subsegmented carpopropodus of the endopods of the third to eighth thoracic limbs, the elongated distal segment of the exopod of the male fourth pleopod, and the linguiform telson armed with spines along entire margins.

This genus is allied to the East Asian species group within *Acanthomysis* s. l. having the most species. All species, except *A. dimorpha* li, 1936, are found from the South China Sea to Japanese waters. However, *Columbiaemysis* is distinguished from the East Asian species group in the following points: the anterolateral corner of the carapace is pointed in *Columbianemysis* while rounded in the East Asian species group; in *Columbiaemysis* the distal segment of the exopod of the male fourth pleopod is so long that it occupies about ⅔ of the proximal segment in length, while in the East Asian species group it is short, 1/20–⅖ of the proximal segment; and the lateral spines of the telson gradually decrease in size apically in *Columbiaemysis,* whereas in the East Asian species group these are subequal in size or arranged in groups with several small spines between larger ones.

Columbiaemysis includes only one species, *C. ignota.*

Columbiaemysis ignota Holmquist, 1982
Fig. 3

Columbiaemysis ignota Holmquist, 1982: 496, 497, figs. 12, 13. (type locality: Whiffen Spit, Sooke Harbor, south Victoria Island, Canada).—Daly & Holmquist, 1986:1208 (list).—Kathman et al., 1986:124, fig. (p. 125).—Müller, 1993: 213, 214 (list).

Acanthomysis brunnea Murano & Chess, 1987:189–192, figs. 5, 6. (type locality: Alvion Cove, California).—Müller, 1993: 190 (list).

Material examined.—3 males (22.4 mm and 2 damaged); Gulf of S. Matinus, California, 8 Dec 1978, provided by J. R. Chess (1 male: NSMT-Cr 12981). 3 females (17.8 mm and 2 damaged); California, 12 m, 21 Sep 1978, provided by J. R. Chess (1 female: NSMT-Cr 12982). 2 males (16.8 mm and 1 damaged) and 2 females (16.4 and 18.4 mm); from stomach contents of a bird, Cassin's auklet (*Ptychoramphus* sp.), Stinson Beach, California, 14 July 1995, borrowed from M. Galbraith.

Description.—Body robust. Integument not hispid. Thoracic somites without sternal process.

Carapace anteriorly produced into triangular rostral plate with pointed apex extending slightly beyond middle of first segment of antennular peduncles, lateral margin of rostrum almost straight; anterolateral corner acutely pointed; posterior margin smooth, emarginate, leaving last one or two thoracic somites exposed dorsally (Fig. 3A).

Eye extending beyond distal margin of second segment of antennular peduncle, 1.3 times as long as broad; cornea semiglobular, occupying ⅖ to half of whole eye in

dorsal view; eyestalk with minute setae in basal part, without papilliform process on dorsal surface (Fig. 3A).

Antennular peduncle of male more robust than that of female, third segment slightly shorter than proximal two segments combined, 1.3 times as long as broad (Fig. 3A); in female third segment as long as first, 1.4 times as long as broad.

Antennal scale lanceolate with rounded apex, all margins setose, apical suture present. In male scale extends beyond distal margin of antennular peduncle by ⅓ of its length and slightly beyond apex of appendix masculina, 6.8 times as long as broad (Fig. 3A, B). In female scale extends beyond distal margin of antennular peduncle for half of its length, 7.6 times as long as broad. Antennal peduncle about half as long as scale in male, ⅖ as long in female (Fig. 3B). Antennal sympod with spiniform process at outer distal angle (Fig. 3B).

Labrum with frontally directed, short, acute process. Mandibular palp with second segment expanded in middle, about 2.2 times as long as broad, third segment half to ⅗ length of second. Outer lobe of maxillule armed with 13 stout spines on apical margin and 3 setae on surface, with humplike process in middle of outer margin. Exopod of maxilla not reaching anterior margin of first segment of endopod, armed with many plumose setae on outer and apical margins; endopod with second segment narrow, 1.9–2.2 times as long as broad, without spines on outer margin.

Endopod of first thoracic limb short and robust, with preischium, ischium and merus slightly expanded inwardly. Endopod of second thoracic limb robust. Endopod of third to eighth thoracic limbs with carpopropodus divided into 5–7 subsegments, dactylus with slender terminal claw (Fig. 3C). Exopods of thoracic limbs with flagellum 8-segmented in first and eighth limbs, 9-segmented in second to seventh limbs; basal plate with outer distal corner rounded and without spines (Fig. 3C).

Penis posteriorly expanded, 1.3 times as long as broad in lateral view, armed with 6 short setae on posterior margin, 7 smooth, inwardly curved setae on apical margin, and 6 plumose setae on apical half of anterior margin (Fig. 3D).

Female with hair tuft on coxa of fourth and fifth thoracic limbs, rudimentary oostegite in sixth endopod, and ordinary oostegites in seventh and eighth endopods; oostegite of seventh limb with bailing lobe.

Abdominal somites subequal in length, smooth or with folds. In some specimens first to fourth abdominal somite with 1 or 2 transverse folds, fifth somite with 1 transverse and 1 middorsal folds, and sixth somite with 2 dorsal folds, anterior one of which is discontinuous in middorsal portion (Fig. 3E).

First to third and fifth pleopods of male reduced to unsegmented lobe, gradually increasing in size posteriorly; fifth pair 1.4 times as long as third (Fig. 3F–H, J). Fourth pleopod of male biramous; endopod reduced to unsegmented lobe; exopod elongate, extending posteriorly to middle of telson, 2-segmented, proximal segment 3 times as long as endopod, armed with a long seta at inner distal corner, distal segment rather long, about ⅔ length of proximal segment, armed with 2 unequal barbed terminal setae, longer seta ⅖ length of distal segment and 1.3 times as long as shorter one (Fig. 3I). All pleopods of female reduced to unsegmented lobes, gradually increasing in size posteriorly; fifth pair 1.5 times as long as third, 1.3 times as long as fourth. Pseudobranchial lobe of all pleopods undeveloped except in fourth pleopod of male (Fig. 3F–J).

Endopod of uropod extending to or slightly overreaching apex of telson, armed with 4 spines on inner ventral margin near statocyst, and with single small spine on dorsal surface of statocyst region (Fig. 3K, L); exopod 1.4 times longer than endopod (Fig. 3L).

Telson long linguiform, 1.6 times as long as last abdominal somite, 2.4 times as long as broad at base; lateral margin armed with

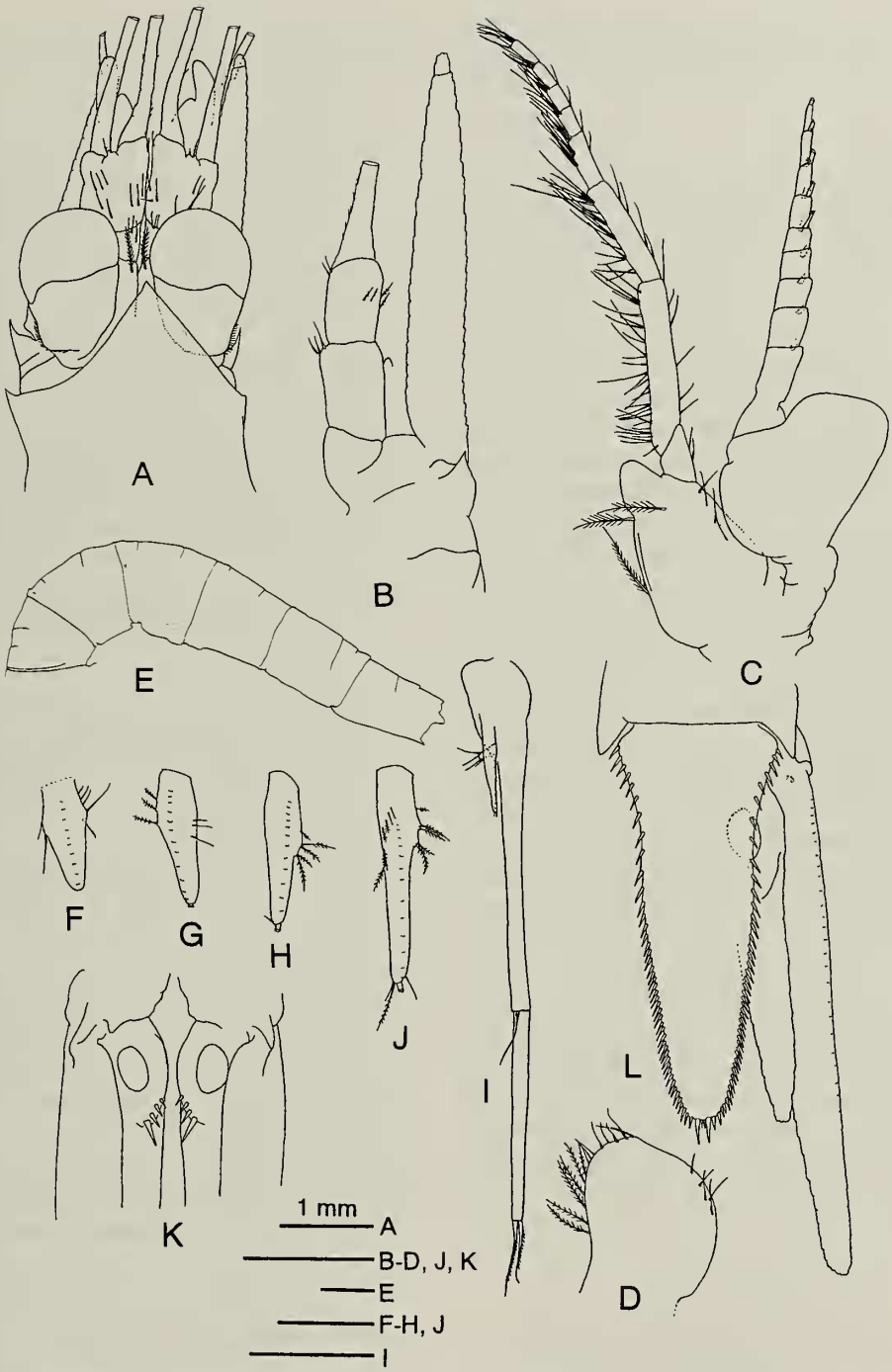

Fig. 3. *Columbiaemysis ignota* Holmquist, 1982. A–J, L: male (22.4 mm, NSMT-Cr 12981); K: female (17.8 mm, NSMT-Cr 12982). A, Anterior part of body, dorsal view; B, antenna; C, third thoracic limb; D, penis, lateral view; E, first to sixth abdominal somites, lateral view; F–J, first to fifth pleopods; K, proximal part of uropod, ventral view; L, telson and uropod, dorsal view.

about 45 spines gradually decreasing in size apically; apex with 2 pairs of spines, outer pair of spines twice as long as distalmost lateral spine, inner pair of spines about half the length of outer pair (Fig. 3L).

Remarks.—Holmquist (1982) described the abdominal somites as smooth. By contrast Kathman et al. (1986) examined a number of specimens that showed some variations with respect to the number of folds or grooves on these abdominal somites. In a reexamination of Holmquist's specimens, an incomplete groove was observed on several somites (Kathman et al. 1986). In the present specimens, one or two folds were present on all abdominal somites.

Murano & Chess (1987) established *Acanthomysis brunnea* based on specimens collected from Californian waters. *Acanthomysis brunnea* agrees with the original description of *C. ignota,* except for the abdominal somites that show intraspecific variation and which are clarified by Kathman et al. (1986). The fourth pleopod of male of *A. brunnea* agrees with the description and illustration of *C. ignota* given by Kathman et al. (1986). *Acanthomysis brunnea* is synonymous with *Columbiaemysis ignota.*

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